

CLAIMS

1. A plasma processing apparatus comprising:
 - a processing container having a holding stage that holds a substrate to be processed;
 - a micro-wave transmission window provided on or above the processing container, opposite to the substrate to be processed placed on the holding stage;
 - a micro-wave antenna provided on or above the micro-wave transmission window, opposite to the micro-wave transmission window, for supplying a micro-wave into the processing container;
 - a micro-wave electric power supplying source connected to the micro-wave antenna;
 - an electric-field measuring unit that measures electric field strength of the micro-wave supplied by the micro-wave antenna; and
 - a controlling unit that controls the micro-wave electric power supplying source based on the electric field strength measured by the electric-field measuring unit.
2. A plasma processing apparatus according to claim 1, wherein
 - the micro-wave antenna is fed via coaxial waveguides, and
 - the micro-wave antenna has: an antenna main body having an opening; a micro-wave radiation surface provided on or above the antenna main body so as to cover the opening, the micro-wave radiation surface having a plurality of slots; and a dielectric plate provided between the antenna main body and the micro-wave radiation surface.
3. A plasma processing apparatus according to claim 1 or 2, wherein
 - the micro-wave antenna is a radial line slot antenna.
4. A plasma processing apparatus according to any of claims 1 to 3, wherein
 - the electric-field measuring unit includes an electric-field measuring probe.

5. A plasma processing apparatus according to any of claims 1 to 4, wherein
the electric-field measuring unit measures an electric voltage on or above a surface of the micro-wave transmission window.
6. A plasma processing apparatus according to any of claims 1 to 5, wherein
the electric-field measuring unit is attached on or above the micro-wave antenna.
7. A plasma processing apparatus according to any of claims 1 to 6, wherein
a plurality of electric-field measuring units is provided.